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Quality Improvement in the US Veterans Health Administration

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The Veterans Health Administration, the largest government-operated health-care system in the United States, has been actively engaged in quality improvement activities since 1990. These activities have been implemented on both a system-wide and facility-specific basis. Some quality improvement efforts have been targeted to specific clinical services; others relate to the overall process of providing patient care. This paper provides an overview of three quality improvement activities in the Veterans Health Administration and considers the research and managerial issues they raise. © Elsevier Science Ltd.

Quality improvement (QI) has become the catchword of the US health-care system. Quality improvement has been defined as a "continuous process to understand the needs and expectations of customers and to search for better ways they can be met" [1]. Although QI travels under a variety of names, including total quality management, continuous quality improvement, and total quality improvement, these different names refer to a similar set of principles and methods and are typically used interchangeably.

Much of what has been written about the application of QI to health-care settings focuses on the private sector. Indeed, survey data suggest that many health-care organizations in the private sector have taken steps to implement QI principles and methods [2]. However, QI also has been of much interest to the public sector [3]. In particular, the Veterans Health Administration (VHA), the largest government-operated health-care organization in the US, has embraced QI through a number of large-scale initiatives. In this paper, we provide an overview of these initiatives, including the research and managerial issues they raise. Since most countries around the world rely heavily on public sector organizations for the delivery of health-care services, we believe it is important to promote international awareness of VHA's QI initiatives.

THE VHA HEALTH-CARE SYSTEM

VHA, a component of the US Department of Veterans Affairs, is a federally financed and operated health-care system for eligible US veterans. VHA currently serves approximately 40% of the 4.7 million eligible veterans. The population VHA serves is largely poor and tends to suffer from chronic diseases.

VHA is one of the country's largest health-care systems with an annual budget of over $17 billion. The system currently consists of 172 hospitals, 122 outpatient centers, 133 nursing homes, and 39 domiciliaries. In 1995, VHA had approximately 800 000 inpatient admissions and approximately 25 million outpatient visits. Many VHA hospitals are affiliated with medical schools and serve as important centers for graduate medical education as well as clinical and biomedical research.

Like its private sector counterparts in the US, VHA is struggling to adapt to the changing world of health-care and its competing demands for lower costs and higher quality. In particular, VHA is confronted with the prospect of a declining budget (in real terms) and an ageing and sicker population. In addition, VHA is striving to keep up with the growing impetus to shift health-care services from inpatient to outpatient settings.

Given these pressures, VHA is striving to do more with less. Quality improvement represents one strategy by which VHA is seeking to increase its own efficiency and effectiveness. Historically, VHA maintained a number of quality assurance functions that were geared toward detecting instances of poor quality of care and correcting them after the fact. Since 1990, VHA has been making a transition from a quality assurance to a quality improvement orientation. VHA has developed a QI infrastructure with the following features:

— measures and related information systems that can be used to identify quality problems and opportunities for improvement;

— decision-making structures and processes for addressing quality issues in a strategic manner;

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— customer-focused culture that emphasizes continuous improvement in quality.

Below we describe three specific VHA initiatives that have provided the foundation for its QI infrastructure: the National VA Surgical Quality Improvement Program, the National Customer Feedback Center, and the facility-level quality improvement initiative.

NATIONAL VETERANS' AFFAIRS SURGICAL QUALITY IMPROVEMENT PROGRAM (SQIP)

Defining, measuring, and monitoring quality is an essential characteristic of QI. Since the late 1980s, VHA has been on the cutting edge of quality measurement and assessment. In 1991, VHA began the National Veterans' Affairs SQIP, which is designed as a continuous quality improvement initiative for non-cardiac surgical care in VHA hospitals [4]. The SQIP, building on the experience of a national cardiac surgery QI program, establishes a system for collecting, analyzing, and reporting patient risk factors and 30-day post-surgical outcomes. The primary goal of the SQIP is to provide VHA hospitals with information about their own surgical outcomes experience relative to other hospitals in the system as well as information about best practices (i.e. structures and processes) that can be used to improve the quality of surgical care. The project incorporates several QI-related practices including outcome measurement, profiling, benchmarking, and best practice development.

The implementation of the SQIP required the development of valid risk-adjustment models for surgical outcomes. The SQIP focuses on two types of surgical outcomes: 30-day post-discharge mortality and 30-day postoperative morbidity based on 21 predefined complications. To compare these surgical outcomes among hospitals, interhospital differences in the preoperative risk of surgical patients needed to be taken into account. The development of these risk-adjustment models involved two steps.

Step one

Step one concerned the risk-adjustme. . process. Forty-four VHA hospitals participated in the model development process. Clinical risk and outcome data were collected prospectively from approximately 87 000 patients who underwent surgery and received either general, spinal, or epidural anesthesia. These data were collected from patient charts over a 27-month period. More than 40 patient risk factors were collected. An adjustment also was made for the underlying risk of the surgical procedure independent of patient risk. Empiric risk-adjustment models were developed to determine expected mortality and morbidity rates for each of the 44 hospitals. The observed rates were divided by the expected rates to create observed-to-expected mortality and morbidity ratios for each hospital. Among the 44 hospitals, the range in the O/E mortality ratio was 0.49:1.53. The range in the morbidity ratio was 0.49:1.46. This amount of variation among the 44 hospitals suggested that significant opportunities existed for improving surgical care.

Step two

Step two involved validating the models. Traditionally, clinicians have been skeptical about whether risk-adjustment models can account adequately for differences among hospitals in the clinical status of their patients. VHA surgeons and nurses were no different. Many clinicians viewed the SQIP with a mixture of doubt and anxiety. Thus, it was essential to demonstrate to the clinicians that the models were valid. VHA officials have taken several steps to test the validity of the models. One particularly ambitious validation effort consisted of conducting site visits to 20 out of the 44 hospitals that were either high (i.e. a higher rate than expected) or low (i.e. a lower rate than expected) statistical outliers for risk-adjusted mortality and morbidity. The site visit teams, which consisted of surgeons, surgical nurses, and management experts, were given the task of rating the surgical services on seven dimensions of structure and process that relate conceptually to quality of care (e.g. technology and equipment). The expectation was that the hospitals with higher ratings on these dimensions would have lower than expected risk-adjusted adverse outcomes (either mortality or morbidity). The site visit results supported this expectation and thus the validity of the models [5]. Moreover, the site visitors, who were blinded to the outlier status of the hospitals they visited, were able to identify correctly (based on the risk-adjustment models) the outcome status of the hospitals in 17 out of 20 cases (see Table 1).

In 1994, the SQIP was implemented fully in all 123 VHA hospitals that perform major surgical procedures. The risk-adjustment models currently are used to produce O/E mortality and O/E morbidity ratios for each of the 123 hospitals based on a 12-month data-collection cycle. The 12-month cycle is used to ensure an adequate number of outcomes at the hospital level. Following the completion of a data-collection cycle, VHA staff hold meetings

TABLE 1. Results of site visits to validate risk-adjustment models*

		Site visit team judgement		
		High	Low	
Risk-adjusted Outcomes model	High	9	1	10
	Low	2	8	10
		11	9	

*Percent exact agreement = 85% ($p < 0.001$); kappa = 0.7.

with the chiefs of surgery from the 123 hospitals. The meetings are used to discuss results and exchange ideas about patterns or trends in the data in a non-punitive context. The focus is to stimulate benchmarking and process improvement. Although all the ratios are presented, they are not attached to hospital names. The chiefs of surgery are given access to their own hospital's ratios only. This policy of confidentiality has been very important to VHA surgeons and has contributed to their willingness to support the goals of the SQIP.

As the SQIP moves forward, VHA will be focusing on what impact the program has had on the overall trend in and riation of surgical outcomes. Efforts currently are underway to identify sources of variation in surgical outcomes that can lead to process improvements [6]. The goal is to develop best practices that can be disseminated to chiefs of surgery. Indeed, a wealth of future opportunities exist for research on practices related to the dissemination and use of the SQIP data for achieving quality improvement. The large sample of participating facilities, with standardized data collection and reporting systems but also naturally occurring differences in staff composition and management practices, provides an excellent research setting. However, several more years of experience will most likely be needed before any conclusions about the impact of the SQIP can be rigorously studied.

An additional future issue for the SQIP concerns the data used for the risk-adjustment process. The SQIP is a very powerful but resource-intensive program. The collection of data from patient charts is particularly expensive, but central to the compilation of outcomes data. VHA has extensive computerized clinical and administrative data systems. However, not all of the information available in patient charts is available in these computerized systems at all hospitals, and the validity of those data has not been fully substantiated. VHA staff are now investigating whether the computerized data can be used in place of the manually collected data in light of the impact on the risk-adjustment models and on costs.

THE VHA NATIONAL CUSTOMER FEEDBACK CENTER

Within a QI framework, customer needs and expectations are the focus of all work activities and processes. Consequently, although clinical outcomes serve as key indicators of quality in many QI initiatives, customer evaluations of quality are also of critical importance. VHA's primary customers are the eligible veterans who use VHA services.

VHA launched the National Customer Feedback Center (NCFC) in 1993 as a system-wide program for collecting, monitoring, and responding to customer evaluations of hospital quality. To obtain these quality evaluations, VHA surveys annually a sample of veterans who have used VHA inpatient and outpatient services. VHA uses survey questionnaires (separate questionnaires exist for inpatient and outpatient evaluations) that it developed following the same methodology as used for private-sector hospitals by the Picker Institute (Boston), a non-profit research and education consulting group (formerly the Picker/Commonwealth Program for Patient Centered Care at Beth Israel Hospital). The survey data provide benchmarking opportunities within VHA as well as between VHA and a group of private sector hospitals that use the Picker Institute questionnaires.

Like the SQIP, the NCFC involved a substantial investment in validating the quality measures. Two primary steps were undertaken.

Focus groups

VHA staff conducted focus groups with veterans to develop and validate items for the questionnaires for a veteran population. Because veterans who use VHA services are in substantially poorer health than individuals using private sector health-care services, [7] issues arose as to whether the types of questionnaires developed by the Picker Institute would be as relevant to VHA patients as they are to patients using private sector health-care services. The resulting questionnaires were, in fact, very similar to those developed by the Picker Institute with some refinements made to make questions more meaningful to veterans using VHA services.

Pilot tests

The revised inpatient and outpatient questionnaires were pilot tested to assess their reliability and also to identify ways to improve their format. The pilot test involved 11 000 veterans who had been discharged recently from a VHA hospital. The results of the pilot tests were used to refine the questionnaire further before the full survey was conducted. The current version of the inpatient questionnaire consists of 48 questions organized into nine dimensions as presented in Table 2. Although the outpatient questionnaire is similar in both content and format to the inpatient instrument, it does not include the transitions and physical comfort dimensions.

The VHA staff adhere to random sampling procedures for selecting veterans for the survey. To conduct the inpatient survey, VHA staff select a stratified sample of discharges (stratified by service area: medicine, surgery, psychiatry) from each VHA hospital. The selection process is limited to patients who were discharged home within 3 months prior to the time the survey sample is selected. To conduct the outpatient survey, VHA staff select a sample of patients who have had an outpatient visit to a VHA facility within a two-month window prior to sample selection. Response rates for both the inpatient and outpatient surveys are on average 70%.

TABLE 2. The VHA instrument for patient evaluations of quality

Dimension	Representative question
Respect for personal preferences	Did you have enough to say about your treatment?
Emotional support	Was it easy for you to find someone on the hospital staff to talk to you about your concerns?
Coordination of care	Sometimes in the hospital, one doctor or nurse will say one thing and another will say something quite different. Did this happen to you?
Information and education	Did a doctor or nurse explain the results of tests in a way you could understand them?
Physical comfort	Do you think that the hospital staff did everything they could to help control your pain?
Access and timeliness	How would you rate the availability of your doctors?
Courtesy	How would you rate the courtesy of your doctors?
Transitions	Did you know who to contact if you needed medical advice or help right away, after you went home?
Family involvement	Did your family or someone else close to you have enough chances to talk to your doctor?

The patient evaluation scores are reported to facility directors and headquarters' staff. The reporting format provides directors with information by which they can benchmark their own hospital's performance with that of other VHA facilities, as well as with those private-sector hospitals using the Picker Institute questionnaires. Moreover, to promote quality improvement, VHA staff perform refined analyses designed to help facilities target those processes that need improvement. For example, VHA staff will examine whether poor evaluation scores are more common among patients with certain clinical conditions, length-of-stay patterns, or family and environmental circumstances (e.g. married vs single). When patterns are detected, VHA staff discuss the results with facility directors regarding next steps in the improvement process.

The coexistence of VHA's customer feedback and surgical quality programs offers unique opportunities for expanding our understanding of quality assessment and measurement in health-care settings. In recent years, there has been tremendous interest in evaluating quality of care from the perspective of the patient. However, little data exist as to whether patient evaluations of quality are related to traditional clinical indicators of quality such as mortality. The VHA staff are now using the SQIP and NCFC databases to study the relationship between these different types of quality measures to understand whether and to what degree they overlap. This research can provide a foundation for developing more sophisticated measures for monitoring quality.

QUALITY IMPROVEMENT AT THE FACILITY LEVEL

Both the SQIP and NCFC are system-wide quality improvement efforts. They both entail centralized decision-making structures, uniform measurement and data collection procedures, and common reporting formats. However, VHA officials also wanted to empower facility staff to develop their own QI initiatives so that they could tailor them to the particular needs and circumstances of their individual facilities. Consequently, beginning in 1990, VHA put forth an effort to educate all facility-level personnel about QI principles and methods. The goal of this initiative was to provide facility personnel with the information and technical skills they needed to develop their own QI infrastructure including performance measures, decision-making structures, and training programs.

VHA's effort to implement QI at the local level had two defining features. One defining feature was the voluntary and decentralized approach taken. VHA officials did not formally at least, mandate facility adoption of QI. Instead, VHA officials encouraged adoption of QI by providing interested facilities with training, consultation, and financial support. Moreover, while VHA headquarters offered facility training focusing on the core philosophy of QI and related methods, it did not impose on facilities any particular model of QI. Facility directors were given the discretion to adapt QI to their own local circumstances.

Labor union issues played an important role in VHA's decision to implement QI in a decentralized manner [8]. If VHA had centralized QI (by mandating its adoption and/or requiring facilities to follow a single QI model), the initiative would have been considered a national program and VHA officials would have been required legally to negotiate the details of the implementation effort with labor union representatives. Such negotiations are likely to have led to substantial delays in the implementation effort. A decentralized approach also provided facility directors with an opportunity to decide when and how to adopt QI given the needs and characteristics of their facility.

The other defining feature of the implementation effort was its phased-in approach. Four groups of facilities — one group per year — were selected to receive consulting, training and funding. VHA headquarters began the implementation effort by hiring external consultants who provided all consulting and training to the first set of facilities adopting QI phase one. In subsequent phases, headquarters shifted gradually to in-house trainers and consultants to train facilities. The external consultants were used to train the in-house trainers who were selected from VHA's general training and education staff. During each phase, participating facilities were assigned their

own consulting team, consisting of an external QI consultant, a physician within VHA who had received prior training in QI methods, a member of VHA's internal training staff who was learning to be an inhouse trainer, and a member of the facility's own staff who would eventually become that facility's QI liaison.

Two primary considerations were behind this phased-in approach to QI implementation [8]. First, a phased-in approach made it possible for VHA to build its own training capacity. The cost of relying on external consultants to train all facilities was estimated to be $30 million, much more than what VHA could afford. Second, VHA headquarters was able to gain experience during the first two phases of the implementation effort (when the number of participating facilities was small) before expanding the effort to the majority of its facilities. The early phases served as important pilot sites that enabled VHA staff to develop their expertise in QI.

Two major issues confronted facility directors in their efforts to implement QI. One issue related to physician participation in QI. Securing physician participation in QI was viewed as critically important but also difficult, because of the fragmentation that traditionally has existed between administration and clinical functions in VHA facilities as well as in the private sector. VHA clinicians were skeptical about any program — including QI — that was being supported by administration. To help facility directors overcome this barrier, VHA officials included physicians on the consulting teams that were assembled to assist facilities in implementing QI. The inclusion of physicians on these teams encouraged physicians at the facility level to "buy into" QI.

The other issue arose over efforts to differentiate QI from traditional quality assurance thinking. At many facilities, a pervasive fear existed that traditional quality assurance (QA) functions would contaminate QI efforts. In such cases, QI was kept completely separate from QA activities. However, this type of organizational arrangement reportedly contributed to confusion and competing efforts in the area of quality management. Moreover, since clinical processes have been the traditional domain of QA, the separation of QI from QA has resulted in QI being used much more frequently to address administrative rather than clinical processes [8]. For VHA officials, this result is both unintended and undesirable [8]. While no definitive solution to this problem has emerged, some facilities have attempted to integrate QI and QA in a manner that retains the distinctive character of QI.

After several years of experience with the QI program, VHA staff have found that substantial variation exists among VHA facilities regarding the process of QI implementation, focus of QI efforts, degree of change in organizational culture, and degree of success of the intervention. Such variation of course reflects the decentralized approach to implementation that was utilized. VHA staff plan to capitalize on the QI experience as an unmatched opportunity to study systematically factors contributing to and factors impeding QI implementation. For example, do differences exist in degree of QI implementation between those facilities that separated QA and QI, and those facilities that integrated QA and QI? Another question to be investigated is: what is the importance of facility leadership to the success of the local QI effort? Indeed, the large number of facilities and the variation in context and approaches to implementation provide a laboratory for research on both QI and organizational development in general.

CONCLUSION

VHA has been an innovator in quality improvement and is a model for other public sector organizations. However, to date, VHA's QI initiatives have focused largely on tertiary care hospitals that have been the core of the VHA health-care system. With the change toward community-based health-care and the reduced emphasis on hospitals as the hubs of the health-care delivery system, VHA is challenged to use the knowledge it has gained in QI and direct it toward the reorientation of the system to primary care. This reorientation is crucial to the survival of VHA in an increasingly competitive health-care environment. Whether the foundation it has built in QI will assist and enable VHA to meet this challenge is a question that many will be seeking to answer over the next several years.

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